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Global Semiconductors

eSSD Demand to Rise Sharply in 2027E on AI Continual Learning

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CITI'S TAKE

Continual learning and AI inference are set to drive a sharp increase in eSSD demand, which we forecast to grow +52.9% YoY in 2027E. We expect QLC demand to rise significantly, driven by near-GPU storage adoption and increasing demand from AI data centers in China. We believe strong enterprise AI demand should offset softer consumer NAND demand. As memory makers prioritize DRAM/HBM capacity expansion over NAND, NAND supply-demand conditions should tighten materially, resulting in deficits of -6.1%/-5.5% in 27E/28E.

eSSD Demand to Increase Sharply — We expect both training and inference demand to continue growing rapidly from 27E onwards, as continual learning technologies become increasingly sophisticated (see our previous note: Global Semiconductors - Continual Learning to Fuel HBM/eSSD Demand (AI Training/Inference)). This should lift eSSD demand for AI inference, as continual learning requires AI systems to continuously incorporate new information while retaining previously learned data. The growing need to preserve and retrieve large volumes of historical data should drive substantially higher storage requirements.

Expect eSSD Demand to Grow +52.9% YoY in 27E — We expect AI inference demand to continue expanding as continual learning adoption grows, driving eSSD demand growth of +52.9% YoY in 27E (+45.0% for total SSD demand). We also expect rising demand for advanced solutions such as XL Flash and HBF, alongside storage-complementary technologies such as CXL. In addition, we expect QLC-based near-GPU storage solutions to gain traction as AI systems require larger storage pools closer to accelerators to support efficient data retention and retrieval.

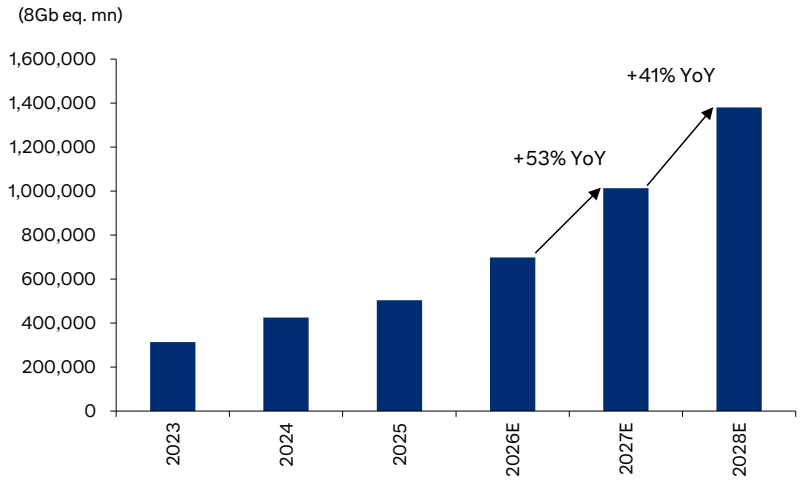
Solid SSD Demand to Offset Weak Consumer NAND Demand — By contrast, consumer NAND demand could soften amid weaker mobile and PC market conditions, but we expect rising AI inference-related NAND demand to offset this weakness. In addition, AI data centers, particularly in China, are increasingly considering SSDs over HDDs, potentially supporting further QLC SSD demand upside from 27E onward.

27E/28E NAND S/D Ratio at -6.1%/-5.5% — We project NAND demand growth of +29%/+33% YoY in 27E/28E, outpacing supply growth of +21%/+25%, as memory suppliers prioritize DRAM/HBM greenfield capacity expansion over NAND. We model high-density eSSD demand growth of +53%/+41% YoY in 27E/28E, driven by continual learning and Nvidia's KV-cache offloading trend. As a result, we expect NAND supply-demand conditions to tighten materially, with NAND S/D ratio at -6.1%/-5.5% in 27E/28E (vs. -0.8% in 2026E).

Implication — We expect continual learning to drive a sharp increase in eSSD demand, offsetting softer consumer NAND demand. KV-cache offloading and HDD-to-SSD replacement demand should further accelerate high-density storage adoption. We reiterate Buy on Samsung Electronics and SK Hynix, as both are well positioned to benefit from tighter NAND fundamentals and structural AI-driven memory demand growth.

See Appendix A-1 for Analyst Certification, Important Disclosures and Research Analyst Affiliations.

Figure 1. SSD Demand Outlook



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Source: Citi Research Estimates, TrendForce

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Samsung Electronics

(005930.KS; W261000.0; 1; 18 Sep 26; 15:45)

Valuation

Our 12-month target price for Samsung of W430,000 is derived using a sum-of-the-parts (SOTP) methodology, based on 2026E EBITDA. In calculating total operating value, we reference global peers in assigning fair-value EV/EBITDA multiples for the five main divisions (6.3x for Memory, 1.0x for Foundry, 0.5x for Display Panel, 4.0x for Mobile and 2.0x for Consumer Electronics), in line with trading multiples of relevant peer companies.

Risks

Downside risks that could prevent the shares from reaching our target price include: 1) Longer-than-expected approval delay in HBM shipment to its key customers; 2) PC sales weaken more than our forecast and NAND demand fails to meet our expectations; 3) aggressive investment by competitors in memory semiconductor/foundry could have a negative impact on prices; 4) competition in the handset market intensifies, reducing SEC's handset margins; 5) any major appreciation of the won would impact SEC's earnings.

SK Hynix

(000660.KS; W1857000.0; 1; 18 Sep 26; 15:45)

Valuation

Our 12-month target price for SK Hynix of W3,000,000 is derived using a sum-of-the-parts (SOTP) methodology, based on 2026E EBITDA. In calculating total operating value, we break down SK Hynix's operating businesses into HBM and commodity/others business to reflect a structural change in next-gen memory market. We reference a global peer (TSMC) in assigning a fair-value EV/EBITDA multiple for HBM business, as we project the memory market is evolving from a traditional commodity market into a highly customized & customer-specific market much closer to the foundry business. For commodity memory business, we apply a historical average of 12m fwd EV/EBITDA during the beginning or early stage of memory upcycles in the past. We apply 8.6x EV/EBITDA to HBM segment and 7.4x to commodity segment to derive the target price.

Risks

Downside risks that could prevent the shares from reaching our target price include: 1) a downturn in DRAM demand; 2) weaker NAND demand than our forecasts; and 3) weakness in global consumption.